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** UNITED CONFEDERATION OF INTERSTELLAR PLANETS **
** OPERATIONS COURSE GUIDE **
** Version 3.00 **
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** SD 240905.12 **
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Article I Introduction

In the role of operations, an officer must be well rounded, flexible, and prepared for any situation that may arise. The Operations Department is the heart and soul of the ship, starbase, or colony; they are like a conductor – coordinating the actions of the various other departments.

Article II Duty Description

This chapter addresses the role playing aspects of an operations officer. As such it deals with what you can and cannot do on your sim. It is important to know what you can and cannot do so you do not go beyond what your duty description entails.

First let's look at the areas that fall under Operation. There are several areas that fall under Operations: Main Operations, Mission Operations, and Flight Operations.

Main Operations – This area has the responsibility to make sure that all resources are scheduled properly. Essentially this means the officer stationed at Main Operations has to make sure that the various functions of the ship are not affecting the other departments or jeopardizing mission goals.

Mission Operations – This is specifically used for monitoring activity related to secondary missions as well as the away team. It can also be used as a relief for Main Operations.

Flight Operations – This area essentially handles the launching of all auxiliary crafts to and from the ship, starbase, or colony. Flight Operations is basically the air traffic controller. This area will assign headings, docking ports, or docking bay. If the vessel is large it may require docking inside the starbase which would be done through the outer-space doors and into the main starship docking area. Every vessel needs to be prioritized on their need of aid basis. As such, Flight Operations must make sure to assign each vessel to the correct size port or bay; though most docking bays or ports are generic in size and can fit any size vessel. This is to make sure that certain size vessels are kept in bays or ports to avoid any unwanted accidents.

Article III Positions, Sub-Departments, and Chain of Command

Each Operations Department has several positions as well as sub – departments in it. This chapter will attempt to give a basic understanding of each one of these positions and sub – departments and their basic day to day activities.

Section 3.01 Positions

Chief Operations Officer (COPS) – The Chief Operations Officer has the primary responsibility of ensuring that ship functions properly and doesn't interfere with the other ships functions. The Chief Operations Officer must also prioritize resource allocation (More on this in Chapter V) so that the most critical activities can have every chance of success. The Chief Operations Officer can also curtail shipboard functions if they believe it will interfere with the ship's current mission or routine operations. They must also declare all planetary sensor readings. The Chief Operations Officer also monitors in-ship sensors that would not otherwise be monitored by engineering (IE: Minor drop in sensor efficiency or electrical interference). This position also declares all onboard damage during a battle, the status of the ship and non-combat status of an antagonist or neutral ship. They also control all non-combat sensors.

Science is also designated as an extension of Operations. Basically Operations detects the object and then Science takes over to further analyze the details and information about the object. If there is no Science Officer, Operations handles these tasks.

Also note that the Chief Operations Officer is also a Department Head and a member of the Senior Staff aboard a ship, starbase, or colony.

Assistant Operations Officer / Operations Officer (AOPS/OPS) – The Chief Operations Officer cannot man the bridge at all times, so extra personnel are needed to relieve and maintain operations. The Assistant Operations or Operations Officer are assistants to the Chief and fulfill these duties when required. This means that they assume the operations console if required at any time.

Section 3.02 Sub – Departments

Flight Deck Operations Officer – The Flight Deck Operations Officer oversees the operations that are undertaken in the shuttle bays and ports, as well as the maintenance bay. All requests for launch and landing clearances must pass to the Flight Deck Operations Officer, who in turn must pass these requests to the Operations Officer manning the bridge.

Materials Officer – Replicator usage can allow the fabrication of nearly any critical mission part, but large-scale replication is not considered energy-efficient except in emergency situation. However, in such situation, power usage is strictly limited, so it is unwise to depend upon the availability of replicated spare parts.

Thus a ship or facility must maintain a significant stock of spare parts in inventory at all times. The Materials Officer is the person responsible for requesting the parts from Starfleet and maintaining the stock and inventory of all spare parts. All requests for supplies are passed to the Materials Officer, who checks and sends the final requests to the Executive Officer for final approval. A good Materials Officer is never caught short on supplies.

Boatswain – Each vessel and base has one Warrant Officer (or Chief Warrant Officer) who holds the position of Boatswain. The Boatswain (pronounced and also written "Bosun" or "Bos'n") trains and supervises personnel (including the ship's company or base personnel as well as passengers or vessels) in general ship and base operations, repairs, and protocols. The Boatswain also maintains the duty assignments for all Operations personnel, sets the agenda for instruction in general ship and base operations, and supervises auxiliary and utility service personnel and daily ship or base maintenance. They also coordinate all personnel cross trained in damage control operations and supervises damage control and emergency operations. They may assume any bridge or operations role as required and is qualified to temporarily act as Chief Operations Officer if so ordered.

Quartermaster – The Quartermaster trains and supervises crewman in bridge operations, repairs, and protocols and sets the agenda for instruction in general ship and starbase operations, they also maintain the ship's log, and the ship's chronometer. They also ensure that everyone has a place to sleep.

Section 3.03 Chain of Command

Just like any naval or military organization with a chain of command, departments also have a chain of command. A department's chain of command is far less complicated as that of a ship, starbase, or colony's chain of command.

The chain of command for any department goes as follows:

Enlisted → Warrant Officer →Junior Officer →Assistant Department Head → Department Head

So that translates into the following for the Operations Department:

Operations Officer →Assistant Operations Officer → Chief Operations Officer

Or

Department Staff → Sub-Department Head → Department Head

Just remember if the officer is higher ranking than you, they are probably your superior officer!

Article IV General Duty Information

The Library Computer Access Retrieval System also known as LCARS will typically handle most everything for you. However there may be times when it is necessary for you to intervene, remember the system after all is not perfect. In this Chapter you will find more information on what is actually involved with your day to day activities as an Operations Officer onboard a ship, starbase, or colony.

Typically in the Operations Department, an officer may have to handle several things at once or just one thing at a time. The following information is just a basic of what might be expected from an Operations Officer.

Transporters – Occasionally or even permanently you may be required to operate the transporters from your console. This is for when an Away Team is in action, and here is where you will need to keep a transporter lock on personnel transported from the ship for fast recovery if needs be.

Away Team – As with the above mentioned, when there is an away team in action it is the Operations Officers responsibility to keep a lock on them at all times. Also in this aspect the Operations Officer will notify the Commanding Officer with updates.

General and Planetary Sensors – If the ship is approaching a planet, star system, or even an anomaly the Operations Officer on the bridge is required to give what details they can find out on it. As long as it is not identified as a ship it is the Operations Officers duty to report on it. If it is a cloaked ship, it is still considered an anomaly and is the Operations Officers duty to report on it until it has been decided if it is a ship.

Resource Management – It is the sole responsibility of the Operations Officer to ensure that everyone on the ship, starbase, or colony is allotted enough resources for the daily activities.

Section 4.01 Operations Domain

There are several areas to a ship, much of which is split into the various departments. Naturally Operations will have knowledge of all the primary and even secondary functions of the ship, starbase, or colony. However, that list is to extensive so in this area will just be a few areas that the Operations Department will typically oversee.

- Transporters, replicators, and holodeck systems
- Main Deflector and Sensor Arrays
- Starbase gangways, loading connections, and computers umbilical
- Emergency Evacuation Systems (Lifeboats, Captain's Yacht)
- Shuttlebays, bay doors, shuttlecraft
- Upkeep of Medical Facilities (Scanners, computers)
- Using spare cargo bays (Usually for Medical Emergencies or Drills)

Section 4.02 Non – Operations Domain

Sadly there are also a few things that as an Operations Officer are off limits (unless authorized by your Commanding or Executive Officer), save the properly authorized personnel. These include but are not limited to:

- Specialized Tactical Systems (These fall under the Tactical Department)
  - Phasers
  - Torpedoes
  - Cannons
  - Cloak
  - Shields
- Specialized Helm Systems (These fall under the Helm Department)
  - Thrusters
  - Impulse Systems
  - Propulsion Systems
- Medical Quarantine Systems (These fall under the Medical Department)
  - These systems have their own short term emergency power systems
- Security Brig Systems (These fall under the Security Department)

Section 4.03 Working with Other Departments

Being an Operations Officer you will inevitable work with other departments at any given time if not all the time. When working with another department here is some basic information of what to expect.

Tactical – Tactical will usually be using the long-range sensors.
Science – Science is similar to Tactical; however it will be a main user of the sensors.
Medical – Medical will need to know when they will have to respond to a medical emergency, and occasionally they may need to have the planetary sensors routed to the med lab so they can assess a planetary situation.
Helm – Helm will need the relevant navigational data to set their courses and to fly the ship with, Helm is also in contact with engineering.
Engineering – Engineering is a special case with the Operations Department. Engineering is like Operations special task force to help keep the ship going. Usually by default the Operations Officer will share almost all of their onboard data with them.

Article V Prioritization

The prioritization or 'pecking order' is one that should not be confused with the Chain of Command as specified by UCIP. This 'pecking order' is listed so you can prioritize and use the ships resource efficiently and effectively. Keep in mind that this 'pecking order' is in a constant state of flux and subject to change depending on the circumstance at hand.

1. Commanding Officer (only when given a direct order or on the bridge)
2. Executive Officer (only when given a direct order that doesn't contradict the Commanding Officer, and on the bridge)
3. Operations
4. Engineering
5. Tactical – When under Red Alert Tactical is moved up the 'pecking order'
6. Science/Helm/Medical – If they are given higher priority by the Commanding or Executive Officer they get moved up in the 'pecking order'.

However, remember that the Commanding and Executive Officer have the highest priorities and other departments will have a higher priority depending on the circumstance.

Article VI Security Codes and Levels

The ship and starbase of UCIP are fit with very advanced computer systems which can store mass amounts of information and perform many tasks. Access to these computers, and to the data they contain is strictly regulates, so that only authorized personnel can perform certain tasks, or access certain data files.

Security Access Codes

Access to all Starfleet computer systems is highly regulated. A standard set of authorization codes have been programmed into the starboard and engineering computer cores of all ships and starbases in order to stop any undesired access to the systems.

The codes are as follows:

- Alpha
  - Access to all areas of the ship.
  - Ability to lockout all stations in every area of the ship.
- Beta
  - Access to non – command sealed areas of the ship.
  - Ability to lockout specific stations.
- Gamma
  - No special access privileges.
  - Able to lockout specific stations.
- Delta
  - No special access privileges.
  - Able to lockout own workstations.
- Epsilon
  - No special access privileges.
  - Not able to lockout any stations.

Special Codes

- Omega
  - Access to all areas of the ship where key access points to systems are located.
  - Not able to lockout any stations
- Theta
  - Access to all areas of the ship.
  - Not able to lockout any station.
- Sigma
  - Access to all areas of the ship were injured personnel are present (internal scan verification).
  - Not able to lockout any station.
- Kappa
  - Access to all intelligence material used only by intelligence officers.
  - Not able to lockout any station.

Different officers on a vessel or starbase have varying levels of security access, depending on their level of authority, or their duties. The following common positions have been assigned standard levels of security access. The final decision on an officer's level of security access, however, is decided by that officer's Commanding Officer.

The Commanding Officer reserves the privilege of permitting limited access to any unspecified section of the ship to any personnel whose functions, in the eyes of the Commanding Officer require it.

Position	Access Level
Commanding Officer	Alpha
Executive Officer	Alpha
Department Heads	Beta
Assistant Department Heads	Gamma
Junior Officers	Gamma
Warrant Officers	Gamma
Seniors Non – Commissioned Officers	Gamma
Non – Commissioned Officers	Delta
Cadets	Epsilon
Civilians	Epsilon
Engineering Override	Omega
Security Override	Theta
Medical Override	Sigma
Special Intelligence Override	Kappa

Data Access Levels

Access to all UCIP is highly regulated. A standard set of access levels have been programmed into the starboard and engineering computer core of all ships and starbases in order to stop any undesired access to confidential data.

The access levels are as follows:

- Level 9
  - Full access to classified material.
  - Full access to Starfleet mission information
  - Full access to personnel information.
  - Able to restrict the security clearance of any officer level 10, level 8 and below.
- Level 8
  - Full access to classified material.
  - Full access to Starfleet mission information as determined by Starfleet Head of Operations.
  - Full access to personnel information as determined by Starfleet Head of Operations.
  - Able to restrict the security clearance of any officer level 7 and below.
- Level 7 Alpha
  - Access to classified material as relates to Subdivision or as determined by Starfleet Intelligence.
  - Full access to Subdivision mission information.
  - Full access to Subdivision personnel information.
  - Able to restrict the security clearance of any officer level 6 and below.

- Level 7
  - Access to classified material as relates to the fleet.
  - Full access to fleet mission information.
  - Full access to fleet personnel information.
  - Able to restrict the security clearance of any officer level 6 Alpha and below.
- Level 6 Alpha
  - Limited access to classified material as determined by the Fleet Command.
  - Full access to mission information as relates to departments overseen in the Fleet.
  - Full access to personnel information as relates to departments in the Fleet.
  - Not able to restrict the security clearance of any officer.
- Level 6 Beta
  - Access to classified material as relates to the formation as determined by the Fleet Command or Starfleet Intelligence.
  - Full access to formation mission information.
  - Full access to formation personnel information.
  - Able to restrict the security clearance of any officer level 6 and below.
- Level 6
  - Limited access to classified material as determined by Fleet Command or Starfleet Intelligence.
  - Full access to mission information.
  - Full access to personnel information.
  - Able to restrict the security clearance of any officer level 5 and below.
- Level 5
  - Limited access to classified material as determined by Starfleet Intelligence
  - Full access to mission information.
  - Full access to personnel information.
  - Able to restrict the security clearance of any officer level 4 and below.
- Level 4
  - No access to classified material.
  - Full access to mission information.
  - Full access to personnel information.
  - Able to restrict the security clearance of any officer level 3 and below.
- Level 3
  - No access to classified material.
  - Full access to mission information.
  - Limited access to personnel information.
  - Able to restrict the security clearance of any officer level 2 and below.
- Level 2
  - No access to classified material.
  - Full access to mission information.
  - No access to personnel information.
  - Not able to restrict the security clearance of any officer.
- Level 1
  - No access to classified material.
  - Limited access to mission information.
  - No access to personnel information.
  - Not able to restrict the security clearance of any officer.
- Level 0
  - No access to classified material.
  - No access to mission information.
  - No access to personnel information.
  - Not able to restrict the security clearance of any officer.

These are guidelines to Data Access Levels.

Position	Access Level
Chief of Starfleet Operations	Level 9
Deputy Chief of Starfleet Operations	Level 9
Starfleet Intelligence	Level 8
Admiralty	Level 8
Sub – Division Commander	Level 7 Alpha
Deputy Sub – Division Commander	Level 7 Alpha
Fleet Commander	Level 7
Deputy Fleet Commander	Level 7
Fleet Head Staff	Level 6 Alpha
Formation Commander	Level 6 Beta
Executive Formation Commander	Level 6 Beta
Commanding Officer	Level 6
Executive Officer	Level 5
Department Heads	Level 4
Assistant Department Heads	Level 3
Junior Officers	Level 2
Warrant Officers	Level 2
Senior Non – Commissioned Officers	Level 2
Non – Commissioned Officers	Level 1
Cadets	Level 0
Civilians	Level 0

Article VII Diagnostic Levels

Typically if anything happens to the ships systems there is a diagnostic that can be run. There are five main levels of diagnostic, ordered from the most complex to least complex.

Level 1 Diagnostic – This is the most comprehensive type of system diagnostic which is usually conducted on a ship's systems. This diagnostic runs extensive automated diagnostic routines. However, the downside to a level 1 diagnostic is it requires a team of crew members to physically verify the operation of system mechanisms and system readings rather than depending on the automated programs. This guards against any possible malfunctions in the self diagnostic hardware and software. When running a level 1 diagnostic on major systems, those systems usually have to be taken offline for the tests to be performed because the diagnostic itself can take hours to complete.

Level 2 Diagnostic – This is also a comprehensive system diagnostic protocol and like the level 1 diagnostic involves extensive automated routine and requires crew verification of fewer operational elements. The results yield less reliable system analysis than a level 1 diagnostic, but it is a procedure that can be conducted in less than half the time of a level 1 diagnostic.

Level 3 Diagnostic – This diagnostic is similar to level's 1 and 2 diagnostics but only involves crew verification of only key mechanics and system readings. The level 3 diagnostic can be performed in around ten minutes or less.

Level 4 Diagnostic – This diagnostic is intended for use whenever trouble is suspected with any given system. This protocol is similar to a level 5 diagnostic, however involves a more sophisticate battery of automated diagnostics. In most systems a level 4 diagnostic can be performed in thirty seconds or less.

Level 5 Diagnostic – This automated procedure is intended for routine use to verify system performance. Level 5 diagnostics are typically performed on most systems at least on a daily basis and are performed during a crisis situation when time and system resources are carefully managed. The level 5 diagnostic can be performed in two and a half seconds or less.

Article VIII Operating Modes

Every vessel has a type of operating mode. Some of these modes are specific to starbases, some to ships, or even in some cases specific to both. There are seven types of operating modes.

External Support Mode – This is usually the mode when a ship is docked at a starbase.

Soft docked means that the vessel is maintaining its position in the docking area with the aid of a tractor or repulse beam.

When a vessel is *hard docked* this typically means that vessels are physically attached to some type of facility. Walkways, turbolift paths, and conduits are made through what is typically termed as "direct sleeve" or "shirtsleeve access" where gangways and turbolift shafts are encased by conduits providing "Electro Plasma System" powers, environmental supports, Structural Integrity Field (SIF) power, as well as thermal and gravitational control. These act as the ships "umbilical" to the station. While hard docked, a cold shutdown is permitted on all primary and secondary power plants, which allows for full maintenance. However, it is typically preferred that at least one auxiliary fusion generator remain online if at all possible. Partial shutdown can be implemented taking for granted that the hard dock is providing for all inhabited portions of the ship. Again this will allow for the shutdown of systems for maintenance. Also note that partial means that the maintenance crew can only work on one section at a time. Ventilator fans, air conditioning units, thermal control, and plumbing must be maintained to areas not under current

maintenance. Gravitational power generation may be discontinued as long as the umbilical provides field energy for synthetic gravity. A cold shut down of the structural integrity field, inertial dampers, navigational deflectors, and tactical deflectors can be permitted as long as the ship is hard docked. Also note that it is suggested that one SIF generator remain on hot standby as a safety precaution.

Separated Flight Mode – This mode has to deal more with power reduction caused by ship separation. Most Confederation vessels have a saucer separation feature that is primarily used only in emergencies. The saucer module disconnects from the rest of the vessel. This allows the saucer module, which contains most of the crew, to remain in relative safety while the star drive section goes into combat or hazardous situations.

Cruise Mode – This is the mode that a vessel is usually in. This is sometimes referred to as "normal mode", or when standing down from another mode referred to as "returning to normal." When in cruise mode, a minimum crew is needed. This will typically include the Commanding or Executive Officer, Operations Officer, and a Helm Officer.

Reduced Power Mode – This is usually invoked due to an emergency or tactical situation. This is a state of high power management and relatively low consumption. This mode is often implemented alongside red alerts or if the ship is acting as a hard dock and supporting another vessel.

Section 8.01 Alert Levels and Conditions

There are five types of alert levels. Each one has some semblance on the management of resources for the Operations Department.

Condition Green – This condition is initiated by the Commanding or Executive Officer on determination that there is no present danger to the vessel or facility as well as any other unusual circumstances. This is typically the normal operating condition of a vessel or starbase.

Condition Blue – This is a special circumstance and can be initiated by the Commanding or Executive Officer on determination that there are specific circumstances which require increased crew readiness, but is not considered an alert. This is typically initiated if the vessel or starbase has the capability to make a planetary landing or can be used for a deck evacuation if the need arises. When this condition is initiated the operations officer on the bridge must do a level 4 diagnostics every hour to check for any potential circumstances that may hinder the vessel.

Condition Yellow – This is considered an alert and may be initiated by the Commanding or Executive Officer, Chief Operations Officer, Chief Engineering Officer, Chief Tactical Officer, or the Chief Medical Officer. It can also be initiated automatically by the computer on detection of a threat which does not immediately or seriously compromise the safety of the vessel. This alert prepares personnel for a potential red alert. When this alert is initiated the operations officer on the bridge must constantly watch the level 4 diagnostics and report any oddities and to shut down any leisure activity unless otherwise specified by the Commanding or Executive Officer. The operations officer on the bridge must also terminate anything that is happening on the vessel that may increase the chance of an accident or damage to the crew or vessel. Also the operations officer or mission operation will run a level 4 diagnostics on everything and a level 5 diagnostics on all environmental systems and escape pods.

Condition Red – This is considered an alert and may be initiated by the Commanding or Executive Officers, or even by automatically by the computer on detection of a threat which immediately or seriously compromises the safety of the crew and vessel.

Condition White – This is initiated on the chance that there is an imminent core breach or in the event that the vessel needs to be evacuated. This condition can be initiated by the Commanding or Executive Officer,

and the Chief Engineering Officer or engineering personnel, as well as automatically by the computer upon detection of a possible warp core breach.

Article IX Tools to Aid an Operations Officer

There are many tools out there that will aid an operations officer. However, this chapter will only discuss two of them: the PADD's and Tricorders.

Section 9.01 PADD's

PADD's or the Personal Access Display Device is a handheld terminal that provides a convenient alternative to using the shipboard control panels. A PADD maintains links with the vessels main computer via a subspace transceiver assembly. The control functions mirror those of any multi-layer panel and it is, theoretically, possible to fly the vessel from one of these devices.

There are three main sizes for PADD's. These are:

- 10.16 centimeters by 5.24 centimeters by 0.95 centimeters
- 20.32 centimeters by 25.41 centimeters by 0.95 centimeters
- 22.86 centimeters by 30.48 centimeters by 1.27 centimeters

Their mass ranges from 113.39 grams to 340.19 grams. The total storage capacity ranges from 15.3 kiloquads to 97.5 kiloquads depending on the variant.

Most PADD's are isolinear based although there are bio-neural gel variants available as well.

Section 9.02 Tricorder's

The standard tricorder is a portable sensing, computing, and data communications device. It contains miniaturized versions of the instruments found to be of most use for both shipboard and away missions. Its capabilities may be enhanced with mission specific peripherals and its many functions are accessible by touch sensitive or voice commands. Here the tricorders have been classified by generation using the "mark" system.

Mark VIII (TR 580 series) – This device measures 8.5 by 12 by 3 centimeters and weighs 353 grams with a hinged case of micromilled duranium foam. The main electronic components include the primary power loop, subspace communications unit, multiple memory storage units, parallel processing block, emergency dump button, control and display interface (CDI), and an ID touch pad. Power is provided by a rechargeable sarium crystal which lasts 18 hours, with typical power at 15.48 watts. The data storage sections o f this device include fourteen wafers of nickel carbonitrium crystal for 0.73 kiloquads of interim processor data storage, and three built in isolinear optical chips, each with a capacity of 2.06 kiloquads for a total of 6.91 kiloquads. The swappable library crystal chips are each formatted to hold 4.5 kiloquads. In Emergency Dump Mode, all memory devices are read in sequence and transmitted, including any library chips in place. In practice, the total time to dump a standard tricorder's memory to a vessel can be as long as 0.875 seconds.

Mark IX (Upgraded TR 580 series) - The device measures 15.81 by 7.62 by 2.84 centimeters and weighs 298.3 grams. The casing is gamma-strengthened polyduranide. The CDI retains the familiar operator interface and 3.5 by 2.4 centimeters display screen. The Tricorder power is provided by, a rechargeable sarium-krellide energy cell, which is rated for 36 hours of continuous use with all subsystems active (this

time increases with less subsystems online). Typical power level is 16.4 watts. The data storage sections include eight wafers of densified chromo polymer isolinear crystal for a total capacity of 9.12 kiloquads, in addition to the standard library disks of 4.5 kiloquads.

Mark X (TR 590 series) – This is one of the first tricorders to use the bioneural circuitry developed in the mid-24th Century for improved computing and response times. This devices measures at 13.46 by 7.71 by 2.84 centimeters, and weighs roughly 303.4 grams. The casing is a reinforced gamma-strengthened polyduranide alloy. The CDI retains the classic 24th Century display. A rechargeable sarium-krellide energy cell also provides this tricorder's power. The data storage sections for this tricorder are all bioneural based. This allows for a greater organization of the data collected and recorded by the tricorder's sensors. This tricorder makes use of 5 wafers of bioneural disks for a total capacity of 15.6 kiloquads, as well as the standard library disks of 4.5 kiloquads.

Article X Technical Briefing

In this chapter you will learn a bit about some of the technical objects you, as an operations officer, will be working with.

Section 10.01 Computer Systems

Please keep in mind that the statistics given below are taken from the Galaxy class vessel. These statistics will vary from vessel to vessel.

Main Computer

Cores - At the heart of the Main Computer system are three redundant main processing cores, each of which can handle the vessel's primary operational computing requirements. Each core incorporates miniature subspace field generators, which create a symmetrical field distortion within the Faster-Than-Light (FTL) core elements; this allows optical data to be processed at FTL speeds.

Core Memory - Storage consists of 2,048 dedicated modules, each with 144 isolinear optical storage chips. Each module can store about 630,000 kiloquads. Average dynamic access under LCARS (Library Computer Access and Retrieval System) software control is 4,600 kiloquads per second.

Subprocessors – A network of quadritonic optical subprocessors is distributed throughout the ship's sections, augmenting the main cores. Most of these subprocessors are located near main corridor junctions for easy access. Subprocessors do not employ FTL elements; however the distributed processing network improves overall system response and provides redundancy in emergency situations. Each subprocessor is linked into the optical data network (ODN), and most also have a dedicated optical link to one or more of the main cores. The Bridge of the ship usually have around seven dedicated and about 12 shared subprocessors, which permit operations even in the event of main core failure. These bridge subprocessors are linked to the main cores by means of protected optical conduits, which provide alternate control linkages in the event of a primary optical data network failure. Further redundancy is provided by dedicated short-range radio frequency (RF) links, providing emergency data communications with the bridge. Additional dedicated subprocessors can be installed as needed to support mission-specific operations. All terminals and control panels are linked to a subprocessor or directly into the optical data network. Each active panel is continually polled by LCARS at 30 millisecond intervals so that the local subprocessor and/or the main core is informed of all keyboard or verbal inputs. Each of the polling inquiry is followed by a 42 nanosecond compressed data stream, which provides panel update information. Also, short-range RF data links are available throughout a starship to provide information transmissions to portable and hand held devices such as tricorders and PADDs.

Isolinear Optical Chip - Devices that use single-axis optical crystal layering to reach sub-wavelength switching distances. Onboard nano-processors reduce system access time by managing data independent of LCARS control. When energized by the Main Core's subspace flux, a 35% increase in processing speed is achieved.

This integrated network of computers, subprocessors, and panels forms the "nervous system" of the ship, and permits continuous real time analysis of the ship's operation status. The network is specifically designed to permit independent operation of remaining system elements in the event of a wide variety of partial systems failures.

Section 10.02 Sensors

Lateral

UCIP Starship exteriors have a number of large sensor arrays comprised of a continuous rack of individual sensor instrument pallets. The array pallets provide microwave feed, ODN (Optical Data Network) links, cryogenic coolant feeds, mechanical mounting points, instrumentation steering servo clusters, and data sub-processor computers.

Pallet Types

- Wide-angle EM radiation imaging scanner, quark propulsion counter, Z-range particulate spectrometry sensor
- High-energy proton spectrometry cluster, gravimetric distortion mapping scanner
- Steerable life-form analysis instrument cluster
- Active magnetic interferometry scanner, low-frequency EM flux sensor, localized subspace field stress sensor, parametric subspace field stress sensor, hydrogen-filter subspace flux scanner, linear calibration subspace flux sensor
- Variable band optical imaging cluster, virtual aperture graviton flux spectrometers, high-resolution graviton flux spectrometer, very low energy graviton spin polarimeter
- Passive imaging gamma interferometry sensor, low-level thermal imaging sensor, fixed angle gamma frequency counter, virtual particle mapping camera

Long-Range

The instruments comprising the long-range sensors are probably the most powerful scientific instruments on a UCIP starship. On the majority of ship classes they are located in the engineering hull right behind the main navigational deflector dish.

Primary instruments include

- Wide-angle active EM scanner
- Narrow angle active EM flux scanner
- 2.0m gamma ray telescope
- Variable frequency EM flux sensor
- Life form analysis instrument cluster
- Gravimetric distortion scanner
- Passive neutrino imaging scanner
- Thermal imaging array
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In high-resolution mode, sensors have a maximum effective range of around five light years. In medium to low resolution mode, the effective range increases to about seventeen light years. It should, however, be noted that a sensor pulse sent at warp 9.9997 would take about ninety minutes to reach its destination and return to the ship when this range is used to cover such distances.

Section 10.03 Life Support Systems

Atmospheric system

This system maintains a class M compatible nitrogen-oxygen atmosphere throughout the habitable volume of UCIP starships. Two independent primary atmospheric plenum systems deliver temperature and humidity controlled environmental gases throughout the ship.

A separate reserve system and emergency system provides an additional redundancy. Normal atmospheric values for class M compatible conditions are 26 degrees Celsius, and 45% relative humidity at a pressure of 101 kilopascals. Atmospheric composition is maintained at 78% nitrogen, 21% oxygen and 1% trace gases.

Emergency Environmental Support Systems

Emergency systems provide suitable life support for the crew for sufficient periods of time for engineering staff to restore normal function to the primary or reserve system. The contingency atmospheric and power supply system supplements and reserve backup system. It consists of self-contained air supply and power modules located throughout the vessel. These units allow about 30 minutes of atmosphere and lighting in the event of a total failure of all primary and reserve systems. In addition UCIP starships have emergency shelters designed to hold crew members up to 36 hours. They are equipped with emergency breathing gas, water, food and power for 24 hours and at least two emergency pressure garment (EPG) environment suits.

Waste Management

UCIP vessels sustain closed ecological systems by recycling waste material. Without this process, ships would be unable to carry sufficient food and water for extended voyages. Material that cannot by directly recycled by mechanical or chemical means is stored for matter synthesis recycling. The waste that can be treated easily is dematerialized into desirable objects. Approximately 5% of all liquid and solid wastes are considered to be hazardous materials under toxicity, reactivity, biohazard or radioactivity standards. Such materials are separated from other waste materials and are immediately diverted to a matter replicator, which converts them to inert carbon particles. This material is then stored for matter replication recycling.

Article XI Credits

UCIP Academy Combined Medical Studies, Captain Garth Triss
http://www.ucip.org/acad/courselist/guides/medical/med-guide.pdf, Conditions

Starfleet Security Codes & Data Access

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